

REMARKS

By way of the present response, claims 10, 37 and 46 are amended, and new claims 58-60 are added. New claims 58-60 are readable on the provisionally elected species. Claims 1-60 currently are pending, with claims 10-36 withdrawn from consideration, as indicated in item 4 of the Office Action Summary.

In the response to the Office Action dated March 6, 2006, Applicant provisionally elected the species characterized for claims 1-9: drawn to the treatment of a crystalline layer, **with traverse**. The traversal was on the grounds that claim 1 is deemed generic since it includes less steps and does not include prior formation of an amorphous layer prior to crystallization in claims 10-36, and that as a result, claims 10-36 may be subject to rejoinder if claim 1 is considered allowable. It is respectfully requested that the Examiner acknowledge Applicant's election and answer this traversal.

Starting on page 2, claims 46-54 and 57 are objected to because line 10 of claim 46 recites "reducing defects in the crystalline semiconductor film," which the Examiner asserts to be unclear with regard to where the defects originate. Applicant disputes any allegation that these claims are not clear, and further submits that a recitation of the origin of defects would not otherwise be required.

First, it is to be further pointed out that defects may be formed during a step of forming an amorphous semiconductor film, during a step of heating to form a crystalline semiconductor film, and during a step of irradiating a first laser beam to the crystalline semiconductor film, for example. Thus, it is difficult to say where defects originate. It depends on a number of factors, and case by case.

Second, the present specification teaches a fact that there are defects in a crystalline semiconductor film, for example, those formed by solid phase epitaxy with metal element and laser annealing. For instance, the inventors have found that crystal defects exist in a vicinity of a substrate or an insulating film for blocking impurities from the substrate by TEM (e.g., see the specification, at page 2, lines 10-14, page 4, lines 2-5, and Fig. 5A). Further, the present invention teaches a method to reduce such crystal defects by irradiating the second laser beam as recited in Claim 46. The method recited in claim 46 does not depend on where defects are originated. It is respectfully submitted that one of ordinary skill in the art would

understand this, as well as the subject matter recited in claim 46, especially when read in light of the specification.

For at least these reasons, the Examiner is requested to withdraw the objection to claims 46-54 and 57.

Claims 37-45 and 56 are objected to because claim 37 includes a duplication of the recitation, “forming a crystalline semiconductor film containing a metal element over a transparent substrate.” Applicant appreciates the Examiner pointing out this inadvertent informality. In response, Applicant has deleted the duplicated language from claim 37, thus rendering moot the objection to claims 37-45 and 56.

In sections 2-18 of the Action, claims 1, 2, 3, 7, 8, and 55 are rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Grigoropoulos (US Patent Application Publication No. 2003/0003636). This rejection is respectfully traversed.

With reference to Figure 1 and paragraph 0029, the Examiner asserts that the Grigoropoulos publication teaches a method of making a semiconductor device in which a semiconductor film (104) is subjected to irradiation by a second laser beam (108) in a direction from the semiconductor layer (104) to the substrate (102), and irradiated with a first laser beam (106) coming from the side of the transparent substrate (102) to the semiconductor layer (104) after the expiration of the second laser beam (108).

It is respectfully submitted, however, that the Grigoropoulos publication does not describe each and every feature of Applicant’s independent claim 1, and hence also claims depending therefrom. For instance, Grigoropoulos does not describe, imply or inherently disclose “irradiating a second laser beam to the crystalline semiconductor film through the substrate in a direction from the substrate to the crystalline semiconductor film after irradiating the first laser beam,” as recited in claim 1. To the contrary, according to paragraph 0029 and the timing chart presented in Figure 2 of the Grigoropoulos publication, the second laser beam (108) is irradiated not after but while the first laser beam (106) is irradiated. Indeed, Grigoropoulos explicitly teaches superpositioning the application of laser beams, and hence does not even hint at irradiating laser beams separately in timing (e.g., see paragraphs 0006 and 0075).

In contrast, claim 1 recites a feature of “irradiating a second laser beam to the crystalline semiconductor film through the substrate in a direction from the substrate to the

crystalline semiconductor film after irradiating the first laser beam.” Although the examiner asserts that the film (104) is irradiated with a first laser beam (106) after the expiration of the second laser beam (108), the first laser beam (106) is already irradiated before the second laser beam (108) in view of the timing chart of Grigoropoulos’ Figure 2. Therefore, Applicant’s claim 1 recites subject matter not described in the Grigoropoulos publication. Accordingly, this Section 102 rejection cannot stand and should be withdrawn.

The Action also includes a rejection of claims 6 and 9 under 35 U.S.C. 103(a) as allegedly being unpatentable over Grigoropoulos in view of Ogawa (US Patent No. 6,884,699). However, neither the disclosure in Ogawa of using a second harmonic of a YAG laser, nor any other part of the Ogawa patent, remedies the shortcomings pointed out above with respect to claim 1. Hence, no combination of the Grigoropoulos and Ogawa documents would have taught or suggested the subject matter recited in claim 1.

The remaining rejected claims, as well as new claims 58 to 60, depend from one of allowable claims 1, 37 and 46, and are therefore allowable at least for the above reasons, and further for the additional features recited.

Based on the forgoing, it is respectfully submitted that this application is in condition for allowance. Rejoinder of and allowance of all pending claims, and prompt notification of the same, is earnestly sought.

Respectfully submitted,

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